

IN THE CLAIMS

(Upon entry of the present amendment, the status of the claims will be as follows:)

1. (Presently Amended) A cutting apparatus, ~~wherein comprising~~ a column ~~is installed with~~ and a support ~~having~~ supporting a cutting blade, said support ~~is constituted to be capable of controlling~~ being configured to control a tilting angle of the cutting blade in a blade length direction, and the cutting blade is being driven to be vertically movable relative to the support by a driving source ~~provided at~~ supported by said support.

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2. (Presently Amended) A cutting apparatus as set forth in claim 1, wherein a plurality ~~of sorts~~ of cutting blade units are provided, each having a ~~different in sorts of~~ driving sources ~~are constituted by unitizing the~~ source, and each including a cutting blade, the support supporting the cutting blade, and the drive source provided above the support, said each cutting blade unit being ~~replaceably~~ interchangeably provided to the column, said ~~respective~~ each cutting blade unit being ~~capable of controlling~~ configured to control the tilting angle of the cutting blade in the blade length direction.

3. (Presently Amended) A cutting apparatus as set forth in claim 2, wherein at least one of said driving ~~source~~ sources is a servomotor.

4. (Presently Amended) A cutting apparatus as set forth in claim 2, wherein at least one of said driving ~~source~~ sources is a hydraulic servomotor.

5. (Presently Amended) A cutting apparatus as set forth in claim 2 wherein at

least one of said driving source sources is a linear-motor.

6. (Presently Amended) A cutting apparatus comprising a column and a support supporting a cutting blade, said support being configured to control a tilting angle of the cutting blade in a blade length direction, and the cutting blade being driven to be vertically movable relative to the support by a driving source supported by said support,

wherein a sensing portion, movable in a blade length direction of a lowering

A cutting blade and ~~constituting a~~ extending parallel shape relative to a surface of an index table in a direction orthogonal to the blade length direction, is mounted on the surface of the index table ~~for cutting a work-piece by the cutting apparatus as set forth in claim 1,~~

wherein and the index table, the sensing portion, the driving source of the cutting blade, and ~~means for making a~~ tilter configured to control the tilting angle of the support ~~capable of controlling~~ are respectively linked with a ~~control portion~~ controller; and

wherein said ~~control portion~~ controller ~~arithmetically~~ processes and stores a tilting angle data of the cutting blade in the blade length direction by detecting a plurality of points of a knife edge in the blade length direction ~~of the cutting blade lowering from an original point position (top dead center), by using~~ said sensing portion mounted on the surface of the index table, both before and after turning the index table by an angle of 90 degrees, and

wherein said control portion controller further ~~arithmetically~~ processes and stores

a parameter of a lowering amount data of the cutting blade ~~in half cutting or cutting at~~ respective at a time of moving the cutting blade by a prescribed pitch, based upon from a driving amount of the driving source of the cutting blade and based upon by detecting the knife edge by said sensing portion; ~~by lowering the cutting blade from the original point position (top dead center),~~ after moving the cutting blade by a prescribed amount in a direction orthogonal to the blade length direction.

7. (Presently Amended) A cutting apparatus comprising a column and a support supporting a cutting blade, said support configured to control a tilting angle of the cutting blade in a blade length direction, and the cutting blade being driven to be vertically movable relative to the support by a driving source supported by said support,

wherein a sensing portion, movable in a blade length direction of a lowering cutting blade, is mounted on a surface of a index table ~~for cutting a work-piece by the cutting apparatus as set forth in claim 1,~~

wherein the index table, the sensing portion, the driving source of the cutting blade, and ~~means capable of controlling a tilter configured to control~~ the tilting angle of the support are respectively linked with a ~~control portion~~ controller; ~~and~~

wherein said ~~control portion~~ controller ~~arithmetically~~ processes a tilting angle data of the cutting blade in the blade length direction by detecting a plurality of points of a knife edge in the blade length direction ~~of the cutting blade lowering from an original~~

point position (top dead center), by using said sensing portion mounted on the surface of the index table, both before and after turning the index table by an angle of 90 degrees, and

wherein said controller further arithmetically processes and stores a parameter of a lowering amount data of the cutting blade ~~in half cutting or cutting~~ at a respective time of moving the cutting blade by a prescribed pitch, based upon ~~from~~ a driving amount of the driving source of the cutting blade, by moving the cutting blade tilted by the tilting angle data ~~and moving the cutting blade~~ by a prescribed amount in a direction orthogonal to the blade length direction, lowering the cutting blade from the original point position (top dead center), and bringing a knife edge into line contact with the index table.

8. (Presently Amended) A cutting apparatus as set forth in claim 6, wherein being said sensing portion ~~capable of linearly controlling~~ is controlled to move linearly in the blade length direction, and

wherein said sensing portion includes having a top portion ~~in~~ parallel to the surface of the index table and facing ~~to~~ a direction orthogonal to the blade length direction.

9. (Presently Amended) A cutting apparatus as set forth in claim 7, wherein said sensing portion is controlled ~~capable of controlling~~ to move linearly in the blade length direction, and

wherein said sensing portion includes a top portion ~~in~~ parallel to the surface of the

index table and directed to a direction orthogonal to the blade length direction.

10. (Presently Amended) A cutting apparatus as set forth in claim 6, wherein said sensing portion comprises is an optical sensor ~~for detecting that detects~~ a position of the knife edge of the cutting blade, said optical sensor is being provided in a movable body having of an upward opening, ~~type~~ said movable body being controlled ~~capable of~~ ~~controlling~~ to move in the blade length direction of the cutting blade, and said movable body ~~includes~~ including an inner space of a ~~desired width~~ predetermined size not interrupting movement of the cutting blade in a direction orthogonal to the blade length direction.

11. (Presently Amended) A cutting apparatus as set forth in claim 7, wherein said sensing portion is comprises an optical sensor ~~for detecting that detects~~ a position of the knife edge of the cutting blade, said optical sensor is being provided in a movable body having of an upward opening, ~~type~~ said movable body being controlled ~~capable of~~ ~~controlling~~ to move in the blade length direction of the cutting blade, and said movable body ~~includes~~ including an inner space of a ~~desired width~~ predetermined size not interrupting movement of the cutting blade in a direction orthogonal to the blade length direction.

12. (Presently Amended) A cutting apparatus as set forth in claim 7, wherein said sensing portion is comprises a probe ~~capable of controlling~~ controlled to move

linearly in the blade length direction, for detecting a displacement amount by being brought into contact with the knife edge of the cutting blade.

13. (Presently Amended) A cutting apparatus as set forth in claim 6, wherein said index table includes extractable positioners ~~positioning means extractably when for mounting~~ said sensing portion ~~is mounted~~ thereon, ~~respectively~~ before and after turning the index table by an angle of 90 degrees.

14. (Presently Amended) A cutting apparatus as set forth in claim 7, wherein said index table includes extractable positioners ~~positioning means extractably when for mounting~~ said sensing portion ~~is mounted~~ thereon, ~~respectively~~ before and after turning the index table by an angle of 90 degrees.

15. (Presently Amended) A cutting apparatus as set forth in claim 1, wherein an index table for cutting a work-piece ~~by the cutting apparatus as set forth in claim 1~~, a driving source of the cutting blade, and a tilter configured to control ~~means capable of controlling~~ the tilting angle of the support are respectively linked with a ~~control portion~~ controller; and

wherein the ~~control portion~~ controller ~~arithmetically~~ processes a lowering amount data of the cutting blade from both original top dead center ~~point~~ positions, ~~(top dead center)~~ ~~from~~ using a driving amount of the driving source, as a tilting angle data of the cutting blade in the blade length direction relative to a surface of the index table, the

tilting angle data being processed by bringing a knife edge of one end side and a knife edge of the other end side ~~in the cutting blade~~ into contact with the surface of the index table, by lowering the cutting blade from the original top dead center point position (~~top dead center~~), in a state where said cutting blade is slanted by a same angle respectively on one end side and other end side in the blade length direction both before and after turning said index table by an angle of 90 degrees, and

wherein said controller arithmetically processes and stores a parameter of a lowering amount data of the cutting blade ~~in half cutting or cutting of a work-piece~~ at a respective time of moving the cutting blade by a prescribed pitch, from a driving amount of the driving source of the cutting blade, by bringing the knife edge of the cutting blade into line contact with the index table, by lowering the cutting blade from the original top dead center point position (~~top dead center~~) by moving the cutting blade tilted by the tilting angle data, by a prescribed amount in a direction orthogonal to the blade length direction.

16. (Presently Amended) A cutting apparatus as set forth in claim 6 wherein said sensing portion ~~is utilized as means for detecting~~ detects edge breakage of the knife edge of the cutting blade ~~when during operation in half cutting or cutting of the work- piece,~~ when the edge breakage ~~will amount to be~~ is equal to or more than an allowable range, and

wherein a transmitter is configured to transmit ~~transmitting means for transmitting~~
information related to the cutting to an operator ~~is linked therewith~~.

17. (Presently Amended) A cutting apparatus as set forth in claim 7, wherein said
sensing portion ~~is utilized as means for detecting~~ detects edge breakage of the knife edge
of the cutting blade when ~~during operation in half cutting or cutting of~~ the work-piece
and, when the edge breakage ~~will amount to be equal to or~~ is more than an allowable
range, and

wherein a transmitter transmits ~~transmitting means for transmitting~~ information
related to the cutting to an operator ~~is linked therewith~~.

18. (Presently Amended) A cutting apparatus as set forth in claim 2, wherein said
driving source is one of ~~sources selected from~~ a servomotor, a hydraulic servomotor, a
linear motor, an air cylinder, and a cam.